Phycological Bulletin

No. 2

DECEMBER 1954

Issued by
The British Phycological Society

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BRITISH PHYCOLOGICAL BULLETIN

* Honorary Editor: Sheila M. Lodge,
Marine Biological Station,
Port Erin,
Isle of Man.

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* The MS. of this Bulletin has been edited by Dr. S.M. Lodge (Mrs. N. Nelson). Owing to changes in her personal circumstances, Dr. Lodge is unable to continue as Editor, and offered her resignation, with regrets, at the Annual General Meeting of the Society in January 1955.

It is hoped to issue Bulletin No. 3 later in 1955, and after that to produce at least one number per year. All contributions, requests for material etc., should be sent to Dr. Elsie Conway, Dept., of Botany, the University, Glasgow. W.2. who will now act as Hon. Editor.

H. T. POWELL,
Hon. Secretary.

PROFESSOR F.E. FRITSCH, F.R.S.

As members will know already, Professor F.E. Fritsch, F.R.S. passed away on May 23rd, 1954, at the age of 75 and obituary notices have appeared elsewhere. Members of the British Phycological Society will wish to add a tribute to one of their first Honorary Members, who by his acceptance of this position give distinction to a very young Society.

This is not the occasion for a review of Professor Fritsch's contribution to the study of Phycology, which in the main consisted of factual additions to our knowledge of the morphology and development of freshwater algae. But even had his scientific work been limited to the two volumes concerning The Structure and Reproduction of the Algae that alone would have placed all phycologists greatly in his debt and earned him the position of respect and esteem, he held at the end of his long and active life. It is probably the last time that one writer will attempt to cover such a large field within the confines of one work. It is also probably true that no one among his contemporaries could have achieved such a task. That Professor Fritsch succeeded is due among other reasons, to his capacity for endless work and above all to his encyclopaedic knowledge. While these two volumes record in the main, the results of investigations typical of the earlier periods and that during which Professor Fritsch was himself most active, he was well aware of and interested in, the newer lines of algal research. In fact many younger phycologists must have had occasion to be grateful for the interest shown by him in their work. In addition, there are many phycologists in distant parts of the world, who are proud and thankful that they received their training under Professor Fritsch.

For 37 years (1911-48) of his life Professor Fritsch was head of the Department of Botany in Queen Mary College of the University of London and his services as an administrator and chairman of committees were much in demand in his later years. The many offices he held, enabled him to put the need for the encouragement of phycological investigations before a wider public with authority. One of his many botanical interests outside the University of London was the Freshwater Biological Association, the need for which he pointed out in his Presidential Address to Section K of the British Association in 1927. He was Chairman of the Council of the F.W.B.A. at the time of his death.

His achievements were all the more remarkable for one who never enjoyed robust health. His genial and friendly manner put less gifted and less experienced fellow workers at their ease immediately and it gave him pleasure to meet and talk with phycologists from all over the world.

KATHLEEN M. DREW.

President, British Phycological Society.
December, 1954.

INAUGURAL MEETING OF THE BRITISH PHYCOLOGICAL SOCIETY - EDINBURGH, JULY, 1952.

A meeting of the British Phycological Group was held in Edinburgh from 9th to 13th July, 1952 and was attended by 80 British and overseas phycologists, many of whom participated in the International Seaweed Symposium which took place from 14th to 17th July.

Meetings were held in the Department of Zoology with the permission of Professor J. Ritchie, the programme being as follows:

Thursday, 10th July.
Field excursion to North Berwick- shore collecting, and to Dunbar- dredging. Leaders F. T. Walker and W. D. Richardson of the Institute of Seaweed Research, Musselburgh. The group later visited the Institute where laboratory facilities were available.

Friday, 11th July.

CYTOLOGY OF ALGAE.	Chairman: Dr K. M. Drew Baker.
1. K. M. Drew Baker	Preparation of Rhodophyta for cytological observations.
2. M. B. E. Godward	Mitosis in *Sphaeroplea* and *Spirogyra*.
3. G. C. King	Cytological observations on the Desmidiaceae.
4. B. Moss and E. Elliot	Cytological observations in the Fucales.
5. P. S. Dixon	Nuclear observations on two British species of *Gelidium*.
6. E. Greig Smith	Cytological observations on *Gracilaria multipartita*.
CULTURE OF ALGAE.	Chairman: Dr. M. W. Parke.
7. D. Ballantine	A comparison of the results obtained by differend methods for the estimation of microplankton.
8. E. A. George	The use of culture in algal taxonomy.
9. M. R. Droop	The use of the cyst in the dry storage of algae.
10. K. M. Drew Baker	Culturing the Bangiales

Saturday, 12th July.

MODERN TECHNIQUES.	Chairman: Dr. M. Knight.
11. M. F. E. Nicolai	The study of cell walls in green algae by X-ray analysis.
12. I. Manton	Electron microscopy as applied to the algae.

T. Levring showed films of fertilization in *Fucas* and *Ulva*, and H. B. S. Womersley showed coloured slides of South Australian shores and algae. Demonstrations illustrating the papers were laid out in an adjacent laboratory.

Sunday, 13th July.
Joint excursion to St. Andrews, with members attending the International Seaweed Symposium. This excursion was attended by about 100 people. After visiting the Gatty Marine Laboratory the party split up, some examining the algae of nearby shores under the leadership of Dr. Helen Blackler, while others visited the University (leader Mr. T. W. Summers). Later the whole party partook of afternoon tea in the Botany Department.

Abstracts of papers:-

Preparation of Rhodophyta for cytological observations. K. M. Drew Baker.

A mixture of 100c.c. 70% alcohol and 6c.c. 40% formaldehyde gives good fixation for many red algae. Advantages are that no washing is needed and that staining is brilliant. A disadvantage is that mucilage is hardened, but this can be counteracted by immersion in a mixture of 10cc. HCl and 90cc. of 70% alcohol in an embedding oven.

Many Rhodophyta can be mounted whole or as squash preparations, the latter consisting of the separated cells of pseudo-parenchymatous thalli, the cells remaining whole. E. Greig-Smith has developed this method which consists of treating the material with acid alcohol in the embedding oven. Selected fragments are then squashed between warmed and albumenised coverslips and microscope slides. Material adheres to the coverslips and can then be stained; correlation with sections is often necessary.

Utilisation of squash or whole mounts not only saves time but may produce evidence not obtainable from sections, e.g. demonstration of occurrence of reduction division in a tetrasporangium initial of *Spermothamnion turneri* on a filament also bearing a procarp with a diploid nucleus in the unfertilized carpogonium.

Brazilin, a stain closely allied to Haematoxylin, is recommended for chromosomes since mordanting with iron alum can be adjusted so that destaining is unnecessary- a great advantage where chromosomes are too small to be distinguished under low magnifications. Both Brazilin and alum are used in 70% alcohol. Clearing in xylol is recommended but must be carried out very slowly if the alga has large cells.

Mitosis in Sphaeroplea and Spirogyra. **M. B. E. Godward.**

Spirogyra species with large chromosomes show a parallel separation of chromatids at mitotic metaphase. In one species, and probably in others, these chromosomes at prophase show large "chromomere"- like regions which are constant in number and arrangement, of the same order of size as small chromosomes of other species. It is suggested that large chromosomes are compound and therefore polycentric, which would explain parallel separation of chromatids. Similar explanation may be possible in other cases where it has been assumed that the centromere is "diffuse"; (Luzula, Coccidae). Mitosis in *Sphaeroplea annulina* shows a chromosome count of 18 or 20.

Cytological observations on the Desmidiaceae. **G. C. King.**

Cosmarium botrytis and *Pleurotaenium kallis* exhibit a polycentric or diffuse centromere type of organisation, which results in parallel separation of chromatids at anaphase.

In *Cosmarium*, n= 18 and in *Pleurotaenium*, n= 104. In the former at metaphase the chromosomes are loosely joined together to form one or more sinuous threads whereas in the latter they are evenly distributed over the equatorial plane of the spindle. In both the truncated spindle appears sub-rectangular in side view.

Re-establishment of the resting nucleus is peculiar in *Cosmarium botrytis*, the plate-like nucleus at the apex of the developing semicell discharging into the protoplasm of the new semicell material having a great affinity for iron (ribonucleic acid?). On staining the contents of the semicell become obliterated by intense coloration which grades off toward the isthmus. Slightly stained cells show that the nucleus now begins to migrate to the isthmus, where it reforms. The new semicell is now almost fully grown. Reformation of the resting nucleus is simultaneous with progressive loss of affinity of protoplasm for iron. Post-telophase activity of this type occurs in *Cosmarium cucumis* and *Straurastrum gracile*.

It is seldom possible to get a polar view of the metaphase plate of an entire desmid cell owing to orientation of the cell on its side under the coverslip so that enzyme complex "cytase" (from the gut of *Helix aspersa*) has been used as described by Fabergé. The enzyme breaks down the cell wall near the isthmus, liberating the undamaged nucleus from its parent cell.

Cytological observations in the Fucales. B.Moss and E.Elliot.

Satisfactory aceto-carmine smears can be made of antheridia when nuclei are dividing or about to divide. The stain was not absorbed in the resting stage; penetration of the egg was not achieved in any species.

Among the many fixatives and clearing agents used, ordinary Langlet and distilled water, and chloroform were the most successful.

There is a long resting period when antheridia and oogonia enlarge but nuclei do not divide (e.g. October to January in *Halidrys*) followed by a short period of active division and rapid maturation. To find divisions in vegetative cells it is necessary to wait for a period of rapid vegetative growth.

Gentian violet and Haidenhain's haematoxylin are suitable stains also; oogonia retain stains longer than antheridia so that drastic destaining may be necessary.

In *Halidrys* both vegetative nuclei and gametes have eight chromosomes. It may be that reduction division occurs in the germination of the zygote (*Halidrys* thus being an exception amongst the Fucales) or that the sperm only activates the oosphere and no fusion takes place.

Nuclear observations of two British species of Gelidium. P.S. Dixon.

British species of *Pterocladia* and *Gelidium* have been studied in order to determine:-

(a) Interrelationships of supposed taxa of the genera in the British Isles.
(b) Life-histories, with reference to carposporophyte development.

In 3 British spp. investigated (*G.pulchellum, G.latifolium* and *G.corneum*) a large cell containing up to 40 nuclei is formed after fertilization, either directly from the carpogonium or by the fusion of the carpogonium and the hypogenous cell. Elongate lobes grew out ramifying throughout the axial plate and forming primordia at their tips. These segment, forming elongate cells of the gonimoblast on which carpospores are borne laterally.

Squash preparations stained with Brazilin have been used. Nuclei are small measuring from 1.5μ to 2.5μ in diameter. In *Gelidium corneum* 4 and 5 chromosomes have been counted in cells of the cortex and nutritive tissue of the carpogonial plant. In some squashes complete carposporophytes were obtained in which all nuclei were in division. Counts of 4 and 5 chromosomes were made throughout two such preparations whereas counts of 9 and 10 were obtained in two other examples. In carposporophite counts, 4.5.9 and 10 chromosomes were found.

Gelidium latifolium gave similar results.

Considerable cytological variation in gonimoblast development and occurrence of haploid and diploid carpospores is thus indicated. The position of reduction division and the nature of the division of the tetrasporangium nucleus have not yet been elucidated.

Cytological observations on Gracilaria multipartita. E.Greig-Smith.

The large fusion cell and the conspicuous nutritive tubes are two interesting carposporophyte features; the nuclear content of the fusion cell and some evidence of chromosome number are to be demonstrated. Material was fixed in formalin-alcohol, softened with HCl before sectioning and strained with Brazilin.

Sjöstedt (1926) considered the carpogonium to be the starting point of the fusion cell in certain *Gracilaria* spp. but in the present species there is a true auxiliary cell, a one-celled branchlet of the supporting cell, and it is from this that the fusion cell develops. Connection between the auxiliary cell and the carpogonium is by a short sporogenous filament. After enlargement of the auxiliary cell, the undivided diploid nucleus is cut off in the apical portion of the cell, leaving the haploid nucleus in the small basal portion. After a division of the nucleus in the apical cell, fusions occur between this cell and neighbouring vegetative cells which are multinucleate at this stage. The resulting fusion cell thus comes to contain large diploid nuclei centrally and numerous small haploid nuclei in the lobes. With further development the fusion cell becomes less lobed, the central nuclei become smaller and peripheral haploid nuclei disappear. Diploid nuclei pass into arm-like protrusions of the fusion cell from the apex of which gonimolobes develop.

The haploid chromosome number is 6 or 7.

A comparison of the results obtained by different methods for the estimation of microplankton.

D. Ballantine.

Accurate counting of microplankton necessitates concentration of the raw sample in the living state since fixatives suitable for naked flagellates are not yet devised.

Use of a centrifuge, with a force of 360 x gravity for at least 15 minutes, or a "Steff" filter and collodion membrane with average pore diameter of 0.5μ give an equally high minimal count. The former is easier to manipulate. In both cases counts were made using portions of the final concentrate (1c.c.) on a haemocytometer slide, diatoms and larger dinoflagellates being omitted.

Until improved culture media and cultural conditions are available, bacterial dilution techniques are not to be recommended for microplankton estimation since very variable (low) counts result.

The use of cultures in algal taxonomy.

E.A. George.

It is often difficult to make specific identifications for algae although it is important that determinations should be made even if material is required for physiological studies only.

Taxonomic work should not be based on a single clone or strain nor on a single individual. Without cultures it is difficult to compare a series of algae. Preservation is often unsatisfactory, whereas, by using cultures a series of forms may be examined in a few hours and the process repeated at intervals if necessary.

The alga must first be obtained in culture, the old techniques being continually improved; new methods will be required before every alga can be cultured easily. Bacteria-free cultures are unnecessary but often desirable, being the best way of maintaining strains.

Secondly, algae must be grown in a suitable medium examples of which are:- soil and water-soil extract; soil extract and sea water for inshore marine forms; peat media for acid bog algae; and soil and starch or barley grains for saprophytic forms. Mineral media are satisfactory for short-lived cultures only, as they soon become exhausted unless initial concentration is so high that good growth does not occur. This may not apply to some algae from oligotrophic habitats.

A demonstration showed some of 60 strains of *Ankistrodesmus* and related forms under investigation. Indian ink was used to show mucilage in certain species of *Ankistrodesmus* and *Selenastrum.*

This mucilage had not been reported previously: it was not demonstrated by methylene blue or nigrosin.

The use of the cyst in the dry storage of algae. M.R. Droop.

Cysts (zygotes, aplanospores, akinetes) enable many fresh-water species to withstand prolonged desiccation. Soil and debris from ephemeral waters provide the most numerous examples. Species which produce resting cells in culture can be stored dry, ready to provide fresh cultures as required. Soil-water cultures containing cysts are decanted into dishes and left to dry. The dry cyst-containing soil is used a few mg. at a time; agar slopes require no further treatment. An essential feature for cyst-survival is that strong illumination be avoided once the cysts are formed.

The following species may be used to demonstrate the method:-

Chlamydomonas pulsatilla, Carteria eugametos, Chlorochytrium sp., *Chlorogonium* sp., *Brachiomonas submarina, Eudorina elegans, Haematococcus droebakensis, H. pluvialis, Scenedesmus dispar, Stephanosphaera pluvialis, Protosiphon botryoides.*

Culturing the Bangiales. K.M. Drew Baker.

The apparatus used consists of a water-bath through which tap water flows, the culture vessels resting on a tray. Fluorescent tubes, suspended above the water-bath, supplement natural daylight. In shallow dishes no aeration is provided, but cultures in 2-litre breakers are aerated continuously.

The medium used is as follows:-

Filtered sea water	1 litre,	Soil extract	50cc.,
Sodium nitrate	0.1 gm.,	Sodium phosphate	0.02 gm.,
0.2% Boric acid	0.5 cc.,	0.1% Manganese sulphate ..	9.375cc.
0.1% Ferric citrate scale	0.625 cc.		

The solution is renewed frequently in small dishes but only at 10-15 day intervals in breakers. Limitations in this apparatus arise from lack of temperature and light control.

Spores from *Porphyra umbilicalis* from Wales and *Bangia fuscopurpurea* from Wales and Naples have been germinated. *P. umbilicalis* germinations have all been of the "creeping filament" type, those of *B. fuscopurpurea* from Wales of the "bipolar" type. Both types of germination have occured among spores of *B. fuscopurpurea* from Naples. Spores of both *Bangia* and *Porphyra* with the "creeping filament" germination, develop into a shell-boring *Conchocelis*-phase; in a sterile condition the two are almost indistinguishable, the *Bangia* filaments being slightly narrower with a greenish-black tinge whereas those of *Porphyra* are rosy. Sporangia have developed on the *Conchocelis*-phase of *Porphyra* and plantlets also but their significance is not known. The completion of the cycle back to the free-living phase has not been achieved in culture.

Spores of *Bangia*, germinating in a "bipolar" manner, give rise to *Bangia* filaments. Cultures of material from Wales and Naples, grown under identical conditions, show considerable differences with respect to colour, length and diameter of filaments. *Bangia* filaments from Wales show few longitudinal divisions whereas those from Naples divide at an early stage producing broad multiseriate filaments. Spore formation is less frequent and more erratic in material originally from Naples than in cultures grown from Welsh spores. Spermatangia have occurred in cultures originating from Naples. Further investigations are necessary to show whether these differences are of specific rank.

The study of cell walls in green algae by X-ray analysis. **M.F.E. Nicolai.**

An X-ray diagram can give information about the presence of crystalline material in the wall and its orientation. Cellulose gives a well-known X-ray diagram; 'native cellulose' or cellulose I, occurring in walls of higher plants, had already been found in some green algae (*Valonia* and some Cladophorales). Cellulose microfibrils are deposited in many layers but in 2 directions only, visible microscopically as two sets of striations nearly perpendicular to each other.

The occurrence in nature of cellulose II (mercerised Cellulose) has been reported in one case only– in *Halicystis*, where it was detected by X-ray analysis.

Other data on wall components in the algal literature are confused and are based on staining reactions. The programme in Leeds started some 5 years ago with the following objects:-

(a) To find whether the native cellulose in crossed orientation is widespread among algae.
(b) To find what other substances occur.
(c) To see whether a relationship exists between wall structure and growth form.
(d) To find out whether any taxonomic importance can be attached to wall structure.

It has been possible to divide the green algae (60 spp. investigated) roughly into 3 groups.

1. Algae with highly crystalline native cellulose in crossed fibrillar orientation. Occurs among Cladophorales and a few Siphonales.

11. Algae with a skeletal substance having an X-ray diagram like that of mercerised cellulose and very poor crystallinity. Most algae are in this group including *Spongomorpha* section of the Cladophoras.

111 Small and heterogeneous group where the wall component is not any known form of cellulose or shows abnormalities in a possible cellulose 1 diagram. e.g. *Spirogyra* & *Vaucheria*.

A relation between wall structure and growth has not been established.

Taxonomic significance is not clear but might be important in considering the status of the Cladophorales.

FIRST ANNUAL GENERAL MEETING: LONDON, 2nd JANUARY, 1953.

A one-day meeting of the Society was held in the Hatton Lecture Theatre, Queen Mary College, Mile End Road, London E.1., on Friday 2nd January 1953, members being accommodated at Lynden Hall, South Woodford. Dr. M.B.E. Godward kindly acted as Local Secretary.

The programme consisted of a symposium on *Marine Algal Ecology*, following by the Annual General Meeting. About 40 members attended various parts of the proceedings.

At 10.30 a.m., Professor L. Newton took the chair for the morning session which was devoted to a detailed account of a recent ecological survey of rocky shores of Fair Isle, as follows:

(i) E. Conway. Introduction to the work.
(ii) E.M. Burrows & S.M. Lodge. A detailed comparison of the algal distribution at sheltered and exposed sites.
(iii) H.T. Powell. The distribution and taxonomic status of forms of *Fucus inflatus* L. in Fair Isle and other British localities.

These papers were following by a short discussion. Lunch, taken in the Refectory by some 34 members, was generously provided by Queen Mary College.

Dr M.T. Martin acted as chairman for the afternoon session, during which Dr J.R. Lewis gave an account of a recent ecological survey of rocky shores of Anglesey. This paper was followed by further discussion, then tea in the Refectory.

An account of some of the work described in the above papers is given in the following publications:

E.M. Burrows, E. Conway, S.M. Lodge & H.T. Powell: "The raising of intertidal algal zones on Fair Isle"
Journal of Ecology, Vol. 42, No. 2, pp. 283-288 & Plate 15, July 1954.

J.R. Lewis: "The ecology of rocky shores around Anglesey."
Proceedings of the Zoological Society of London, Vol. 123, Part 3, pp. 481-549. November 1953.

THE FIRST ANNUAL GENERAL MEETING commenced at 4.0 p.m., Dr K.M. Drew Baker being in the Chair. There were 34 members present. The following summary of the proceedings of the meeting is based on the official Minutes:

1. **The minutes of the Inaugural General Meeting** of the Society, held at Edinburgh on 12th July 1952, were read by the acting Secretary (H.T. Powell), and approved.
2. **The acting Secretary** then gave a report on the short History and activities of the Society to date. There were now 76 members, and since the last meeting a postal ballot for the election of the first Council of the Society had been organized. 54 completed ballot forms had been returned by members and the result of the election would be worked out and accounced during the course of the present meeting. The report was adopted.

3 **The acting Treasurer** (Dr M.T. Martin) gave an interim report on the financial position of the Society to January 2nd 1953. Income totalled £79. 0. 2d. and the balance in hand £56. 12. 6d. The report was adopted.

4. **Election of Auditors.** It was agreed that Dr G.C. Ainsworth (Exeter) and Prof. W.T. Williams (Southampton) be invited to serve as Auditors to the Society.

5. **Resolution from retiring Committee concerning continuation by the Phycological Society of projects already initiated by the informal group of phycologists.**

It was proposed by Dr E.M. Burrows and seconded by Dr S.M. Lodge that the following Resolution be adopted by the Society and included in the Minutes: "That this meeting records its desire that all the activites inaugurated by the informal Group of Phycologists, which first met at Bangor in September 1951, be continued by the British Phycological Society. These activities include:

(a) the holding of scientific meetings which shall include reports of original work in progress, reviews, symposia and demonstrations;

(b) the holding of field meetings. As far as marine algae are concerned, it is hoped that these will follow a planned sequence and that the meetings themselves will be so planned that the best use is made of the opportunity for both the accumulation of scientific information and the help of junior members;

(c) the prepartion of a revised Check-list of the marine algae of the British Isles, and the accumulation of information for an eventual comprehensive new British marine algal flora. It is recommended that this project be entrusted to a subcommittee.

(d) the prepartion and distribution to members of a periodic News Bulletin. It is recommended that subcommittees appointed by Council present an Annual Report to Council.

This resolution was carried unanimously.

6. **Election of Officers and Members of First Council.**
The result of the postal ballot having been worked out during the course of the meeting, the acting Secretary now announced that the following Officers and Members had been elected to serve for the year 1953:

President: Dr K.M. Drew Baker.
Vice-Presidents: Dr. M. Knight, Professor L. Newton.
Hon. Treasurer: Dr M.T. Martin.
Hon. Secretary: H.T. Powell.

To retire December 1953.	**To retire December 1954.**
Dr H. Blackler	Dr M.B.E. Godward
Dr E. Conway	Dr S.M. Lodge
Dr M.F.E. Nicolai	Dr J.W.G. Lund

7. **Field Meeting at Plymouth, September 1953.** Dr M.W. Parke suggested that the meeting be held from 19th to 26th September, and this was agreed to. Dr Parke then outlined a tentative programme, including excursions, boat and laboratory work, and welcomed further suggestions from members present. Suggestions included: an excursion to a freshwater site if a sufficient number were interested; demonstrations of culture methods and of rare local algae.

8. **Proposed addition to Constitution.** The following proposed addition to the Constitution of the Society (proposed by the Secretary and seconded by Dr Baker) had been circulated previously to all members, and was now put to the meeting:

> "**HONORARY MEMBERSHIP.**
>
> At any General Meeting of the Society, after nomination by the Council persons who have rendered conspicuous service to the subject of Phycology or to the Society, may be elected Honorary Members of the Society. Honorary Members shall have all the privileges of Ordinary Members."

The proposal was carried, by 27 votes for, to 1 against, and with 1 abstention.

9. **Dr J.W.G. Lund** next made a statement concerning the International Rules of Botanical Nomenclature. Dr Lund urged members of the Society to consider the recently published, revised International Code and to communicate any views or proposals concerning algal nomenclature either to himself or to Mr R. Ross (British members on the special committee for Algal Nomenclature) in time for consideration at the next International Botanical Congress to be held in Paris during July 1954. In particular, Dr Lund asked that we consider the following matters:

(i) conservation of genera – a matter requiring specialist opinion – our present Check-list subcommittee could consider this;

(ii) the present requirement of Latin diagnoses for the valid publication of new taxa (Article 44): this presented great difficulty in some groups of algae and Dr Lund considered that special provision should be made for algae, allowing diagnoses in French, German or English to be valid. A Phycological proposal that the diagnoses for algal taxa be given in two languages, one of which shall be French, German, English or Latin, was rejected by the general Nomenclature Committee at the last Congress in Stockholm;

(iii) Articles 18–21 relating to typification, and Article 35 relating to infraspecific taxa.

Dr Parke agreed that we should do something about voting on the generic names proposed for conservation by P.C. Silva (1952) and Dr. Blackler supported this view. Dr Baker suggested that we should ask for more time to consider these proposals in view of the fact that only a few members were familiar with them. Miss Dickinson stressed that detailed knowledge of every case was required before one could justifiably vote for or against conservation. Finally it was proposed by Dr J.W.G. Lund and seconded by Dr E. Conway that Council should consider the appointment of a small subcommittee of nomenclatural experts to look into these matters. Dr Baker suggested that the committee's terms of reference should be "to consider the International Code of Botanical Nomenclature in relation to the needs of phycologists." The proposal was carried unanimously. Mr M.R. Droop suggested that one members of the committee should be a person working on non-sexual algae. The Chairman then asked for nominations for this committee and the following were proposed: Miss C.I. Dickinson, Mr E.A. George, Dr J.W.G. Lund (Convener), Dr M.W. Parke, Mr R. Ross; the matter was then referred to Council.

10. The following Resolution was proposed by Dr E. Conway, seconded by Dr J.K. Spearing and agreed to unanimously: Resolved: "that a Banking Account for the British Phycological society be opened with Midland Bank Limited at their Bangor, N.Wales Branch and that the bank be and is hereby empowered to honour Cheques, Orders for Payment, Bills of Exchange

and Promissory Notes drawn, signed, accepted or made on behalf of the said British Phycological Society by the Treasurer, and to act on any instructions given by the person so authorised with regard to any accounts whether in credit or overdrawn or any transactions of the said British Phycological Society''.

The Chairman concluded the proceedings by thanking all who had taken part in this very successfull one-day meeting. The Society wishes to thank Queen Mary College for all hospitality received, and particularly Dr M.B.E. Godward for making all local arrangements.

Standard Algal Record Cards were on sale to members of the above meeting: price 3/- per 100.

Also on sale at this meeting were a limited number of copies of the following publication by Dr M.W. Parke: "The Marine Algae", in "Flora of Devon", Vol. 2, part 1, pp. 1-77, Publ. Torquay 1952.

H.T. POWELL,
Hon. Secretary.

THE BRITISH PHYCOLOGICAL SOCIETY
OFFICERS AND COUNCIL FOR THE YEAR 1953.

President: Dr K.M. Drew Baker.
Vice-Presidents: Dr M. Knight, Professor L. Newton.
Hon. Treasurer: Dr M.T. Martin, University Hall, Bangor, Caernarvonshire, North Wales.
Hon. Secretary: H.T. Powell, Marine Station, Milport, Isle of Cumbrae, Scotland.

The Council consists of the above five Officers and the following six Members:

To retire December 1953:	**To retire December 1954:**
Dr H. Blackler	Dr M.B.E. Godward
Dr E. Conway	Dr S.M. Lodge
Dr M.F.E. Nicolai	Dr J.W.G. Lund

Hon. Editor of 'British Phycological Bulletin': Dr S.M. Lodge.
Hon. Auditors: Dr G.C. Ainsworth, Prof. W.T. Williams.
Committee for Marine Algal Check-list and Flora:

Dr M.W. Parke (Chairman), Dr E.M. Burrows (Secretary),
Dr K.M. Drew Baker, Dr H. Blackler, Dr S.M. Lodge.
Dr M.T. Martin, H.T. Powell.

Committee for Algal Nomenclature:

R. Ross (Secretary), Miss C.I. Dickinson, E.A. George,
Dr J.W.G. Lund, Dr M.W. Parke.

SUMMER FIELD MEETING AT PLYMOUTH
SEPTEMBER 19th – 26th 1953.

By kind permission of the Council of the Marine Biological Association, a seven-day Field Meeting of the Phycological Society was held at the Laboratory, Citadel Hill, Plymouth, Devon, from 19th to 26th September 1953. The meeting was organized by Dr Mary Parke and Miss Dorothy Ballantine, and was attended by some 45 members, students and visiting phycologists. Members were particularly pleased to welcome to the meeting the following overseas phycologists: Miss B.T. Chiu (Hong Kong), Mr I.C.G. Cooper (U.S.A.), and Mr O. Sundene (Oslo).

Most members arrived at Plymouth on Saturday 19th September, and at The Laboratory that evening Dr Parke outlined the general arrangements for the meeting. Sunday, 20th, was spent at The Laboratory: several very interesting demonstrations had been set out by Dr Parke and Miss Ballantine, including a number of southern forms of British marine algae, algal cultures, and a "puzzle corner" of some algae of doubtful indentity. Mr F.T. Walker showed some cine-films of the Edinburgh Meeting, taken by himself and Dr T. Levring. A Council Meeting was held during the afternoon; and that evening Dr M. Alison Wilson gave an illustrated talk on "Mrs. A.W Griffiths (1768–1858) and the early history of marine botany in Britain." Dr M. Knight expressed the thanks of members to Dr Wilson for a most interesting lecture.

Monday 21st. The Director of the Plymouth Laboratory, Mr F.S. Russell, visited members of the Society in the Easter Class Building, welcomed us to Plymouth, and wished the meeting every success. It had been arranged to spend this day dredging for algae in Plymouth Sound, but rough seas unfortunately prevented any possibility of dredging. However, the day was spent very profitably working in the laboratory, and some of the more waterproof members collected algae on the shore below The Laboratory. During the evening Dr M.A. Wilson and Dr D.P. Wilson delighted members with a showing of many of their superb lantern slides (both black and white, and coloured) of marine algae. Professor L. Newton, on behalf of all present, thanked Dr and Mrs wilson for a most instructive and interesting evening.

Tuesday 22nd. The weather by now had must improved and the scheduled field excursion to Wembury took place, led by Dr Parke and Miss Ballantine. A number of rare or otherwise interesting algae were found at this renowned collecting area, including *Gigartina pistillata*, *Spyridia filamentosa*, *Cystoseira spp.*, *Bifurcaria rotunda*, *Rivularia bullata*, *Cylindrocarpus berkeleyi* and *Nemalion*. The party returned to the laboratory during the afternoon to spend the rest of the day, and some of the night, identifying, preserving and pressing the material collected.

Wednesday 23rd. The weather continued fine and warm; one small party carried out some dredging in Plymouth Sound, while a larger group went on a field excursion to Looe led by Dr Parke and Miss Ballantine. Many interesting algae were collected at Looe, including *Bonnemaisonia hamifera*, *Laminaria ochroleuca*, *Sauvageaugloia griffithsiana*, *Jania rubens*, several *Cystoseiras* and *Codium spp.*

The next day, **Thursday 24th**, most members joined an excursion to the delightful cove known as North Sands, near Salcombe, led by Dr M.A. Wilson, Dr M.W. Parke and Miss Ballantine. Here we found *Gracilaria foliifera*, *Gigartina acicularis*, *Cylindrocarpus berkeleyi*, *Calliblepharis lanceolata*, and a magnificent bed of *Laminaria ochroleuca*.

During the afternoons of Wednesday and Thursday, and on Friday morning (25th), members worked out material collected on the excursions; and the Classroom and another room reserved for our use became hives of intense phycological activity - to say nothing of Dr Parke's room, Miss Ballantine's room and sundry alcoves and corners. All this activity was sustained at frequent intervals by urns of tea and buns, and the mean speed of reaction to the sound of a spoon tinkling in a tea-cup was observed to be, in this unusually large sample of phycologists, of the expected high order. Dr Parke and Miss Ballantine cannot be too highly praised for the calm and efficient way in which they met all of the hour to hour needs of more than 40 visiting phycologists.

During the evenings of Tuesday (22nd) and Wednesday (23rd), the Subcommittee for Marine Algal Check-list & Flora held two meetings at Dr Parke's flat.

A General Meeting of the members present was held during the afternoon of Friday 25th. This meeting, a summary of which is given below, was followed by a second short meeting of Council. Then, at 4.30 p.m. we were entertained to tea in the Common Room by kind invitation of the Director, Mr F.S. Russell. Most unfortunately, Mr Russel was prevented by ill-health from attending the party himself, but Mrs Russell conveyed his good wishes to the Society. Lady Rowlands accompanied Mrs Russell, and a number of members of staff of the Plymouth laboratory were also present. Dr Baker expressed the hearty thanks of the Society to all at Plymouth for everything that had been done to make this meeting such an outstanding success, and Dr G.A. Stephen and Mrs Russell replied. Finally, Dr Elsie Conway expressed our especial thanks to Dr Parke and Miss Ballantine for all the work they had done on our behalf both before and during the meeting, and presented each with a bouquet of flowers. It may be added that, in addition to organizing the meeting, Dr Parke and Miss Ballantine found time to make a magnificent, large, iced birthday cake, in the shape of a horse-shoe, to mark the first anniversary of the Phycological Society. the thought, and the cake, and the personal hospitality of these two friends throughout the meeting, was very much appreciated by all.

One good idea, that we should do well to bear in mind for future field meetings, was the provision to all participants of duplicated maps and notes relating to each excursion area.

H.T. POWELL,
Hon. Secretary.

Summary of the proceedings of an Extraordinary General Meeting, held at The Laboratory, Plymouth, at 2.15 p.m. on Friday 25th September 1953.

The President, Dr K.M. Drew Baker, took the chair, and 22 members were present.

1. **Letters from members:** letters and messages regretting inability to attend the Plymouth meeting and sending best wishes for the success of the meeting, had been received from:- Dr G.C. Ainsworth, Dr E.M. Delf, 2nd/Lt P.S. Dixon, Miss V.E. Ford, Professor F.E. Fritsch and Mr E.A. George.

2. The Secretary reported that Dr G.C. Ainsworth and Professor W.T. Williams had agreed to serve as Auditors of the Society accounts, and that the Society had opened a Bank Account with Midland Bank Ltd., Bangor.

3. **Honoaray Membership of the Society.** The Chairman stated that Council wished to nominate Mr. A.D. Cotton, Dr E.M. Delf and Professor F.E. Fritsch as the first Honorary Members of the Society. After some discussion, it was agreed that these nominations should be made at the next Annual General Meeting of the Society.

4. **Future Meetings:** (i) next Winter Meeting: the Secretary reported that it was proposed to hold a one-day meeting of the Society in London, early in January 1954. The programme would consist of a Symposium on algal physiology and biochemistry, followed by the second A.G.M.; this was generally approved, and several possible speakers were suggested.
(ii) Summer Field Meeting, 1954: the Secretary reported that Professor L. Newton had kindly offered the hospitality of University College, Aberystwyth, for a Phycological Society Field Meeting to be held at Aberystwyth during July 1954, near to the dates of a Field Meeting of the British Ecological Society which is also being arranged at Aberystwyth during July. Council had gratefully accepted Professor Newton's invitation, even though the date of the meeting may clash with the later part of the International Botanical Congress to be held in France during July 1954, since it was considered that many of our members would not be attending the Congress and would wish a Field Meeting to be arranged in Britain.

The idea of such a meeting was generally approved. Dr E.M. Burrows and Miss L.M. Newton expressed the hope that, if possible, dates would be chosen that did not clash with the Congress, to enable more British, and perhaps some overseas, phycologists to attend.

5. **International Botanical Congress, Paris, July 2nd - 14th.**
The Chairman outlined the preliminary programme for this Congress and pointed out that, for the first time, the Congress would include a Section devoted exclusively to Phycology (Secretaries: Professor J. Feldmann and Dr P. Bourrelly).

6. **American Phycological Society Journal.** The Secretary reported that the American Phycological Society are considering the possibility of publishing a new Journal of Phycology, the price of which would depend upon the number of subscribers. A subscription list of 500 would enable the price of such a Journal (issued quarterly) to be as low as 5.50 U.S. dollars per annual volume. The Americal Society would welcome support for this venture; members who thought they might subscribe to such a Journal were asked to inform either the Secretary, or Dr C.P. Silva, Department of Botany, University of Illinois, URBANA, Illinois, U.S.A., as soon as possible.

7. **Affiliation to the Biological Council.** The Secretary reported that Council had decided to affiliate the Phycological Society to the Biological Council. The function of the Biological Council, which is composed of representatives of the principal British biological Societies, is to co ordinate activities and consider problems of mutual interest. This action was approved.

8. **Committee for Algal Nomenclature.** The Secretary read a Report from Mr R. Ross relating to several algal nomenclatural problems, and a letter from Dr J.W.G. Lund containing a proposed modification of Article 44 of the International Code (relating to diagnoses of new taxa):
(i) Article 44: the essence of Dr Lund's new proposal was that, on and after a date to be decided, new taxa of algae be considered as validly published when accompanied by a diagnosis in either Latin, French, German or English. Council had discussed this but could not agree to support the proposal officially, favouring rather (but not unanimously) that algal diagnoses should be given in two languages one of which should be Latin, and the other French, German or English. This issue was discussed at some length; the Chairman suggested

that diagnoses in two languages – one in any language desired by the author, and the other in Latin, German, French or English – might meet with wide support, and Dr M.A.P. Madge thought that this might be supported by mycologists. Mr W.E. Jones formally proposed that the Society should support Dr Lund's new proposal, but the proposal was not seconded, and no general agreement was reached on this question. (The matter has since been pursued further – see Report of London meeting, 1st January 1954).
(ii) Conservation of Algal Genera: members with special knowledge of any case were asked to send in their views to Dr Lund or Mr Ross, the British members of the International Algal Nomenclature Committee.

9. **Committee for Marine Algal Check-list and Flora.** Dr F.M. Burrows gave an account of the work of this committee, which exists for the purpose of producing a complete Check-list of British Marine Algae, an up-to-date Flora, and also eventually a Biological Flora. In order to facilitate the production of the Check-list and the Flora, the committee has produced a schedule, within the framework of which the necessary information on genera and species can be collected together. (The schedule is printed elsewhere in this Bulletin, together with a report from Dr Burrows of the work and aims of this committee).

   The Secretary reported that the Society would be purchasing 100 copies of Dr Parke's "Preliminary Check-list of British Marine Algae", for sale to members at a price of about 1/- per copy.

10. **Election of Council for 1954.** The Secretary stated that the President and two Vice-Presidents would be retiring from office at the next A.G.M., but were eligible for re-election to the same office; and that 3 Ordinary Members of Council would also retire and were not eligible for re-election. The Secretary was glad to be able to state that the President and two Vice-Presidents would accept re-nomination for the 1954 Council in the Offices they hold at present. Circulars relating to the election of the 1954 Council would be sent to members as soon as possible.

11 The Chairman the proposed a vote of thanks to the Marine Biological Association and to Mr. F.S Russell for permission to hold the present meeting at Plymouth, and especially to Dr M.W. Parke and Miss D. Ballantine for all the work they had done to ensure the comford and great success of the meeting. All present heartily associated themselves with these thanks.

H.T. POWELL,
Hon. Secretary.

SECOND ANNUAL GENERAL MEETING: LONDON, 1st JANUARY, 1954.

By kind permission of Professor W.H. Pearsall, a one-day meeting of the Phycological Society was held in the Department of Botany, University College of London, Gower Street, W.C.1., on Friday 1st January 1954. Dr G.E. Fogg kindly acted as Local Secretary; and members were very comfortably accommodated at Canterbury Hall.

The programme consisted of a Symposium on algal physiology and biochemistry, followed by the Annual General Meeting. Some 57 members and guests attended various parts of this highly successful meeting.

The symposium began at 10 30 a.m., under the chairmanship of Professor W.H. Pearsall. Professor Pearsall extended a warm welcome to the Society, meeting for the first time in his Department. and hoped that we would have a successful meeting. The following papers were read during the morning session

1. G.E. Fogg (University College, London): The physiology of algae other than *Chlorella*.
2. L. Fowden (University College, London): The amino-acids and proteins of algae.
3. M.R. Droop (Marine Station, Milport): The conditions governing haematochrome formation in *Haematococcus pluvialis*.
4. C.P. Spencer (Marine Station, Bangor): Some aspects of the kinetics of growth of a marine alga.

Each paper was following by discussion, and at 12 30 p.m. members adjourned for lunch at the College refectory. The following paper, read at 2 00 p.m., concluded the symposium:

5. F.J. Taylor (Queen Mary College, London): The absorption of glucose by *Scenedesmus quadricauda*.

Dr J.M. Drew Baker then proposed a vote of thanks, to Professor Pearsall for affording the Society the excellent facilities and warm hospitality of his Department, and for taking the chair during the symposium; to Dr Fogg for making all the local arrangements for the meeting, and for his contributions to the symposium and the demostrations (see below); and to the other speakers, and members of this department who had either contributed demonstrations or helped in other ways to ensure the success of the meeting. All present heartily associated themselves with these thanks, and Professor Pearsall replied on behalf of members of his staff.

Members then spent a very interesting hour examining a fine series of demonstrations illustrating some of the culture and other techniques used for the study of algae in the Botany Department, University College. Demonstrations were contributed as follows:

1. J.H. Belcher: Large-scale culture of *Tribonema* (10-litre).
2. G.E. Fogg & D. Cuthbert: Culture apparatus for algae. Many species of unicellular and filamentous algae, both freshwater and marine, were exhibited in small, scale-culture.
3. L. Fowden: Apparatus for producing cell-free homogenates of algae, as used in the investigation of algal proteins.
4. J.M. Kain: Unialgal cultures of marine diatoms.
5. J. Millbank: Large-scale culture of *Chlorella* (36-litre).
6. J.D.A. Miller: Growth experiments with *Monodus*.
7. J D.A. Miller & W.E.E. Smith: Continuous culture apparatus for *Chlorella* and other algae. In this elaborate apparatus, constant conditions and cell density are maintained by electronic control.
8. R.N. Singh: Interference microscopy of blue-green algae.

The demonstrations were followed by tea. served in the Library of the Botany Department.

An account of the above symposium and demonstrations, entitled "Algal Physiology and Biochemistry", is given by Dr G.E. Fogg in "Nature", Vol. 173, pp. 434–435, March 6th 1954.

H.T. POWELL,
Hon. Secretary.

THE SECOND ANNUAL GENERAL MEETING was held at 4 00 p.m., the President, Dr K.M. Drew Baker, in the chair. There were 33 members present. The following account of the proceedings of the meeting is based on the official Minutes.

1. **Letters from Members:** Letters and messages regretting inability to attend the present meeting and sending best wishes for the success of the meeting had been received from: Professor F.E. Fritsch, Dr J.W.G. Lund, Dr M.F.E. Nicolai, Dr M. de Valéra and Dr M.A. Wilson.

2. **The minutes of the 1st Annual General Meeting** held at Queen Mary College, London, 2nd January 1953, were read by the Secretary, and approved.

3. **The minutes of the General Meeting held at the Laboratory, Plymonth**, 25th September 1953, were read by the Secretary, and approved. The Chairman signed both sets of minutes.

4. **Report of Hon. Secretary.** The Secretary then gave a report of the meetings and other activities of the Society during the year 1953. (a) Meetings: The Society held two general meetings during 1953 – the 1st A.G.M. at Queen Mary College, London, on 2nd January, and the summer Field Meeting at Plymouth, 19th–26th September. (Reports of these meetings are given earlier in this Bulletin). (b) The 1953 Council met on four occasions, as follows: 2nd Jan. (London), 20th and 25th Sept. (Plymouth), 1st Jan. 1954 (London). (c) Two Committees have been active – one considering problems of Algal Nomenclature, and the other a revised Check-list and Flora of the British marine algae. (Reports from the Secretaries of these committees are included below). (d) "Phycological Bulletin": The Secretary regretted the delay in producing Bulletin No. 2, but hoped that it would be possible to produce this number by March or April 1954. Thereafter the Society would produce at least one number per year, to appear in March or April. (e) In September the Society became affiliated to the Biological Council; this Council was preparing a "Diary of Biological Meetings for 1954", and the Secretary hoped to obtain cheaply a sufficient number of copies of the Diary to be able to send one to each member. (f) Membership of the Society has increased from 76 at the end of 1952 to 93 at present. (g) A postal ballot for the election of members to the 1954 Council had been arranged during the autumn. 44 completed ballot forms had been returned by members (a disappointingly small number), and the results of the ballot would be worked out and announced during the course of the present meeting. The Secretary's report was adopted (prop. Professor L. Newton; sec. Mr W.E. Jones).

5. **Report of Hon. Treasurer.** The Treasurer (Dr M.T. Martin) regretted that it had not been possible to circulate the Balance Sheet for the past financial year before the present meeting. This was because accounts had not been closed until 30th November 1953, leaving very little time for the Balance Sheet to be prepared and audited. Council had now decided that in future our financial year would end on 31st October, to allow time for the preparation and curculation of the Balance Sheet before the A.G.M. Dr Martin then explained the Balance Sheet (see copy at end of this report) which showed a Bank Balance of £71. The Treasurer's report was adopted (prop. Dr E. Conway; sec. Dr. M.W. Parke). The Treasurer and

Chairman both remarked how grateful we were to our two auditors (Dr G.C. Ainsworth and Professor W.T. Williams) for their assistance with the Balance Sheet, and, on the proposal of Dr Conway and Professor Newton, it was agreed to inform the auditors of our great appreciation of their services.

6. **Report of Hon. Editor of 'Phycological Bulletin'.** Dr S.M. Lodge reported that no Bulletin had been produced during 1953, due to lack of contributions. It was hoped to produce Bulletin No. 2 by March or April 1954: this number would contain a list of members, reports of meetings, additional lists of herbaria, etc. The meeting considered whether future Bulletins might include annual abstracts of algal literature. Professor Newton suggested that a committee might be appointed to abstract literature, in sections as in the discontinued 'Revue Algologique'. Mr M.R. Droop asked whether the present Check-list and Flora Committee might undertake this work. On the proposal of the Chairman it was agreed to leave this matter for the consideration of Council. The Editor's report was adopted.

7. **Report of Secretary of Committee for Marine Algal Check-list and Flora.** Dr E.M. Burrows gave a report of the activities of this Committee to date. (See Dr Burrows' full report of the work and aims of the committee printed elsewhere in this Bulletin). The report was adopted.

8. **Report of Secretary of Committee for Algal Nomenclature.** Mr R. Ross gave the following report of the work of this committee:

"The committee has not met since the Society's September meeting. It has, however, agreed in correspondence the following report which sets out developments in the matters reported by the committee to the September meeting and makes certain recommendations.

(i) Latin diagnoses. As far as the committee is aware, only two formal proposals to amend Article 44 of the Code have been made, viz:-

(a) by the Société Mycologique de France, which reads

"Modification à apporter à l'Article 44 (Fin du paragraphe): ......de deux diagnoses dont l'une sera rédigée dans la langue maternelle de l'auteur et l'autre dans une langue differente de la première."

(b) by F.E. Fritsch, Fr. Hustedt, A.A. Aleem, R. Margalef, P. Bourrelly and P. van Oye, which reads (English version)

"The algologists believe:

1. descriptions of new species must be made in two languages, one in Latin or an international congress language, and the other as desired by the author.
2. descriptions without good drawings are not recognised.
3. publications of good drawings of new species in well-known international iconographical works, in which for technical reasons no descriptions are given, must be recognised as valid."

In the opinion of the committee the wording of neither of these proposals is acceptable. As regards (a), the necessity to use his mother tongue as one of the two languages might be most inconvenient to a botanist brought up in, say, a Welsh-speaking home. In (b) "an international congress language" is too vague an expression, as also is a "good drawing", for what standard must a drawing reach to be called good, and by what criteria is one to judge whether the standard has been attained? In some cases also photomicrographs are as good as, or better than, drawings. The third part of this proposal is considered to be undesirable in principle.

Since these amendments have been tabled, the question of Latin diagnoses must arise in the discussions of the Nomenclature Section in Paris and it will be possible to put forward an alternative form of words. The questions at issue are:

(a) Should the Latin diagnosis rule be retained for the Algae?
(b) If not, should diagnoses be in one language or two?
(c) Should authors have a free choice of language, or should the diagnosis (or one of the diagnoses) be limited to a short list of languages?
(d) If so, which languages?
(e) Should illustrations be compulsory?

The committee knows that the members of the Society are not unanimous on these points. It therefore suggests that a questionnaire on the above lines be circulated to members, to be returned about mid-February. When the replies have been received, the committee will, if opinion is not too evenly divided, draft an amendment to Article 44 reflecting the Society's views. This will then be sent to Dr T. Levring, Secretary of the Special Committee for Algae of the Nomenclature Section of the International Botanical Congress, with the suggestion that his committee consider it to see whether it could form the basis for a proposal to be put forward in his committee's name as representing the views of algologists as a whole. The committee also recommends that, if the Society decided to take this action, the Phycological Society of America be informed so that it can consider whether to take parallel action.

(ii) Validation by 'figures with analyses'. Mr R. Ross was personally submitted the following proposals:

Articles 50 and 52: As a footnote to "a plate or figure with analyses" insert:- "Single figures of microscopic plants showing the details necessary for identification are to be included in this definition."

The provision in question only applies to figures published before 1908 and is intended to bring the letter of the law into conformity with received practice and thus make for stability in nomenclature. The committee recommend that this proposal be supported by the Society.

(iii) Votes in the Nomenclature Section at Paris. It is possible that the Society will be allotted one or more votes in the Nomenclature Section at Paris. Inquiries about this are being made. If any are obtained, the committee recommend that the Council delegate a member to exercise them, instructing that member to vote in accordance with the Society's policy on those matters it has discussed, e.g. Latin diagnoses, and on other issues to use his or her discretion."

The report was adopted and all of the recommendations made in it were approved, as follows:

(i) Latin diagnoses: it was proposed by Miss L.M. Newton, seconded by Mr M.R. Droop, and agreed, that a questionnaire on this subject be circulated to members and the matter further pursued as recommended in the report. Mr Ross remarked that the questionnaire would be drafted at a meeting of the committee to be held the next day.

(ii) Validation by 'figures with analyses': it was proposed by Dr M.W. Parke, seconded by Dr H. Blackler, and agreed, that the Society should support this new proposal by Mr Ross.

(iii) Votes in the Nomenclature Section at Paris: it was agreed to recommend to Council that a member be delegated to exercise any votes that may be allotted to the British Phycological Society in the Nomenclature Section at Paris. (Council subsequently delegated Mr R. Ross to represent the Society in this way).

9. **Election of Honorary Members of the Society.** The Chairman formally moved a proposal from Council that the following phycologists be elected Honorary Life Members of the Society:-

A.D. Cotton. Esq., F.L.S.,
Dr E. Marion Delf,
Professor F.E. Fritsch, F.R.S.

The proposal was cordially carried.

10. **Election of Officers and Members of Council for 1954.** The President, the two Vice-Presidents, and three Ordinary Members of Council were due to retire at this meeting. The President and Vice-Presidents were eligible and had been nominated for re-election for a second consecutive year in the same office, and were now elected to the 1954 Council.

Four nominations had been received for the three vacant offices of Ordinary Member; the result of the postal ballot for these offices having been worked out during the course of the present meeting by two 'scrutineers' (Messrs M.R. Droop and E.A. George), the Chairman announced that Dr M.W. Parke and Dr G.E. Fogg had been elected, but that Dr E.M. Burrows and Mr R. Ross had received an equal number of votes. The Chairman therefore called for a further vote, which resulted in Mr Ross being elected.

Thus the members of Council for 1954 will be as follows:

President: Dr K.M. Drew Baker.
Vice-Presidents: Dr M. Knight, Professor L. Newton.
Hon. Treasurer: Dr M.T. Martin.
Hon. Secretary: H.T. Powell.
Ordinary members:

To retire December 1954:	**To retire December 1955:**
Dr M.B.E. Godward	Dr G.E. Fogg
Dr S.M. Lodge	Dr M.W. Parke
Dr J.W.G. Lund	R. Ross

11. **Election of Hon. Auditors.** Dr Martin stated that both Dr G.C. Ainsworth and Professor W.T. Williams had mentioned that they would be willing to continue serving as Hon. Auditors to the Society and proposed that the auditors be re-elected. Professor L. Newton seconded, and the proposal was carried.

12. **Future Meetings:** (i) Field Meeting to be held at Aberystwyth, 19th – 24th July 1954. Professor L. Newton reported that this would be a joint Field Meeting with the British Ecological Society, and a detailed preliminary programme had been drawn up in consulatation with Dr R.E. Hughes (Secretary of Ecological Society) and Professor T.A. Stephenson. It was hoped to arrange shore excursions near Aberystwyth and to St. Davids, and there would be other excursions to the sand and mud flats of the Dovey Estuary, to Tregaron Bog, and to Cader Idris with the possibility of examining a mountain lake (alternatively, a walk through the Llyfnant Valley). An extra (alternative) excursion to the salt-marshes and dunes at Mochras (near Harlech) would be included in the programme if possible.

The Chairman thanked Professor Newton for arranging such an attractive programme, and about 12 of the members present indicated that they would probably attend this meeting.

(ii) Winter Meeting, January 1955. The Secretary stated that the next one-day winter meeting be held in London during early January 1955; not on 1st Jan. since this was not a popular date, but probably on Tuesday 4th January. The programme would include an Address from the President, related scientific papers from members, and the 3rd Annual General Meeting.

(iii) Summer Field Meeting 1955. After some discussion it was decided to try to arrange the 1955 Summer Field Meeting at a centre of freshwater biological research. Suggestions included the Freshwater Biological Association (Ambleside), Malham Tarn, and Flatford Mill. It was left to the Secretary to make enquiries.

Other Business: Mr. E.A. George enquired why we call our committees "subcommittees". The Secretary replied that such bodies were called subcommittees in Clause 12 of our Constitution, but that in his opinion either term might properly be used.

There being no further business, the Chairman declared the meeting closed.

Copies of a pamphlet entitled "Notes to Speakers", prepared by the Biological Council and distributed in limited numbers to affiliated Societies, were available to members at the above meeting. Also available were copies of the following paper by Dr M.W. Parke: "A preliminary check-list of British marine algae", J. Mar. Biol. Assoc. U.K., Vol. 32, pp. 497–520, 1953 – price 1/- per copy, or 1/3d. per post.

Council Meetings: By kind permission of Professor W.H. Pearsall, the Council of the Society held two meetings in the Library of the Department of Botany, University College of London, on 1st January 1954, as follows:

(i) 1953 Council: 9.15 a.m. to 10.25 a.m.
(ii) 1954 Council: 5.30 p.m. to 6.25 p.m.

The following decisions, of general interest to members, were among the business discussed:

1. **Expenses of Speakers invited to address the Society.** Council discussed whether or not the Society should pay the expenses (if requested to do so) of speakers invited to read a paper at a meeting of the Society. It was agreed that the expenses of speakers invited to read a paper at a Society Symposium could not be paid be the Society, but that in some few exceptional cases it may be desirable to consider paying some of the expenses incurred by guest speakers from other fields of research. The matter was left to the discretion of the

Officers of the Society. Council considered that it would be advisable to make it known that the Society cannot undertake to pay the expenses of members or other phycologists invited to read a paper at any general Symposium arranged by the Society.

2. **Bankers Order Forms.** The Treasurer pointed out that many members may find it convenient to pay their annual subscription by Bankers Order. Council authorized Dr Martin to obtain suitable forms and to send them to all members of the Society.

3. **Phycological Bulletin.** Council discussed the suggestion that annual abstracts of algal literature be prepared for inclusion in future Bulletins, and considered whether or not a committee should be appointed for this purpose. It was agreed that bibliographies (with short abstracts if possible) of recent papers would be useful in the Bulletin, but that it seemed hardly necessary to appoint a committee to undertake this work. Rather, it was left to the Editor of the Bulletin to invite individual members to prepare annual bibliographies of the recent literature in their own particular spheres of phycological interest.

H. T. POWELL,
Hon. Secretary.

THE BRITISH PHYCOLOGICAL SOCIETY
OFFICERS AND COUNCIL FOR THE YEAR 1954.

President: Dr K.M. Drew Baker
Vice-Presidents: Dr M. Knight, Professor L. Newton.
Hon. Treasurer: Dr M.T. Martin. University Hall. Bangor, Caernarvonshire, North Wales.
Hon. Secretary: H T Powell Marine Station, Millport, Isle of Cumbrae, Scotland.

The Council consists of the above five Officers and the following six Members:

To retire December 1955:	**To retire December 1955:**
Dr M.B.E. Godward	Dr G.E. Fogg
Dr S.M. Lodge	Dr M.W. Parke
Dr J.W.G. Lund	R. Ross, Esq.

Hon. Editor of of 'British Phycological Buletin': Dr S.M Lodge. The Hartley Botanical Laboratories, University of Liverpool. Liverpool 3.

Hon. Auditors: Dr G.C Ainsworth. Professor W.T. Williams.

Committee for Marine Algal Check-list and Flora:

Dr M.W. Parke (Chairman), Dr E.M. Burrows (Secretary),
Dr K.M Drew Baker. Miss D. Ballantine. Dr H. Blackler.
Dr R.W. Butcher. M.R. Droop. N.I. Hendey. Dr S.M. Lodge,
Dr M.T. Martin, H.T. Powell.

Committee for Algal Nomenclature:

R. Ross (Secretary), Miss C.I. Dickinson, E.A. George,
Dr J.W.G. Lund, Dr M.W. Parke.

BRITISH PHYCOLOGICAL SOCIETY.

Income and Expenditure Account: July 1952 - 30 November 1953.

Expenditure	£	s	d
Record Cards	13	15	8
Postage and Stationery	17	3	11
Cheque-book		5	0
Subscription to Biological Council		5	0
Expenses of Plymouth meeting	6	18	0
	38	7	7
Surplus	66	6	1
	£104	13	8

Income	£	s	d
Subscriptions 1953	84	0	0
Sale of Record Cards	8	10	0
Stock of Record Cards	5	5	8
Fees for Plymouth meeting	6	18	0
	£104	13	8

Balance Sheet at 30 November 1953.

Capital and Liabilities	£	s	d	£	s	d
Capital at July 1952	3	0	2			
Add Surplus	66	6	1			
				69	6	3
Subscriptions in advance				7	0	0
				£76	6	3

Assets	£	s	d	£	s	d
Balance at Bank	71	5	7			
Less unpresented cheque		5	0	71	0	7
Stock of Record Cards				5	5	8
				£76	6	3

(Signed) M. T. MARTIN,
Hon. Treasurer.

We certify that the above Balance Sheet and Income and Expenditure Account are in accordance with the books and vouchers of the British Phycological Society, which we have duly audited; and in our opinion they give a true and correct view of the transactions of the Society for the period July 1952 to 30th November 1953 and its position at 30th November 1953.

(Signed) W. T. WILLIAMS) Hon.
G. C. AINSWORTH) Auditors.

PROPOSED PUBLICATIONS OF THE BRITISH PHYCOLOGICAL SOCIETY.

The Subcommittee for Marine Algal Check-list & Flora is preparing for the publication of three works on British Marine Algae, as follows:

(1) A Check-list.
(2) A Flora.
(3) A series of genus and species descriptions based on original work for separate publication. These will ultimately constitute a Biological Flora.

Of these works the Check-list is receiving the most imediate attention. A "Preliminary Check-list of British Marine Algae" was published in September 1953 by Dr M. W. Parke and this is to form the basis of further work

In order to facilitate the collecting of data and also to ensure uniformity of treatment, the subcommittee has formulated schedules within the framework of which the descriptions of genera and species for the Check-list and Biological Flora should be written. The form to be taken by the Flora as distinct from the Biological Flora is still under discussion.

Schedule for the description of a genus for the Biological Flora:

1. The genus name with reference to the original description and, if amended, to the amended description with bibliographical reference, dates and authorities and reference to any monographic treatment.
2. The Type or Lectotype of the genus. The location of the Type and the locality of the type specimen.
3. A description of the genus.
4. The range of distribution both for the British Isles and the World.
5. A key to the species.

Schedule for the description of a species for the Biological Flora:

1. The name with reference to the original description and, if amended, to the amended description.
2. Locality of type and co-type.
3. An illustration from a standard work or reference to an illustration in a monograph or a new illustration.
4. The complete synonymy.
5. General distribution for the British Isles using the County boundaries and seaward extension from these, with additional information for rare or very rare species.
6. World distribution.
7. Level of occurrence on the shore and the type of habitat.
8. Variation with latitude.
9. Period of reproduction and variation of this with level on the shore and with latitude.
10. Special notes, e.g. endophytes, fungi, galls, etc.

For the Check-list the following information should be given:

1. Genus and species names as for the Flora with a minimum synonymy where necessary.
2. Reference to a good illustration.
3. Localities.

It is hoped that as many people as possible will help with the detailed work required in the preparation of the descriptions for these projects and the Committee will welcome offers of work on particular genera and species Lists of such promised work and also completed work, will be published from time to time

Advice on this work and suggestions for genera particularly in need of detailed investigation may be obtained from the members of the subcommittee, who have taken responsibility for collecting together and editing the data for special groups of algae.

Rhodophyta – Dr K.M. Drew Baker and Dr M.T. Martin
Phaeophyta – Dr M.W. Parke and Dr H. Blackler
Chlorophyta – Dr E.M. Burrows and Dr S.M. Lodge
Cyanophyta – Mr H.T. Powell
Bacillariophyceae – Mr N.I. Hendey
Dinoflagellata – Miss D. Ballantine
Cryptophyceae – Dr R.W. Butcher
Small forms generally – Dr M.R. Droop

Any further information may be obtained on application to the Secretary of the Subcommittee.

E.M. BURROWS,
Hartley Botanical Laboratories,
The University, Liverpool, 3.

PRELIMINARY LIST OF THE TYPE COLLECTIONS OF ALGAE.

Agardh, C. & J.G.	Lund, Sweden, Univ.
Allen, T.F.	New York, U.S.A., Bot. Gard. *(Charophyta)*
Allen, G.O.	London, England, Brit. Mus. *(Charophyta)*
Anderson, C.L.	New York, U.S.A., Bot. Gard.
Areschoug, J.E.	Stockholm, Sweden, Naturhist. Riksmuseet.
Bailey, J.W.	Boston, U.S.A., Soc. Nat. Hist.
Beck von Mannagetta	Prague, Czechoslovakia, Charles Univ. Mus. Nat. Hist.
Bonnemaison, Th.	Quimper, France, Library of the Town.
Børgesen, F.	Copenhagen, Denmark, private herb.
Bornet, E.	Paris, France, Mus. Nat. Hist.
Bory de St-Vincent, J.B.M.	Paris, France, Mus. Nat. Hist; Leiden, Holland, Rijksherbarium (few), ex. herb. Kutz.
Borzi, A.	Palermo, Italy.
Braun, A.	Berlin-Dahlem, Germany (destroyed); Leiden, Holland, Rijksherb., ex herb. Kutz.
Brebisson, A de	Paris, France, Mus. Nat. Hist; Caen, France, Inst. Bot.; Leiden, Holland, Rijksherb. (few), ex herb. Kutz.
Bremekamp, C.E.B.	Utrecht, Holland, Geological Mus.
Brugger, Ch.	Chur, Switchland, Nat. Hist. Mus.
Collins, F.S. (also Collins and Howe)	New York Bot. Gard., U.S.A.
Cramer, C.	Zurich, Switzerland, Inst. f. Spezielle Botan., Eidgen. Techn. Hochschule.
Crouan, P.L. & H.M.	Concarneau, France.
Decaisne, J.	Paris, France, Mus. Nat. Hist.
De Notaris, G.	Rome, Italy, Ist. Ort. Bot. Univ.
De Toni, G.B.	Padua, Italy, Univ.; private collection Brexia, Contre del Carmine 37.
Dawson, E.Y.	Los Angeles, U.S.A., Hancock Foundation Univ.-S.California.
Drew, K.M.	Berkeley, Calif., U.S.A., Univ.

Drouet, F.	Chigaco, U.S.A., Nat. Hist. Mus.
Eaton, D.C.	New Haven, Conn., U.S.A., Yale Univ.
Endlicher, S.	Vienna, Austria, Nat. Hist. Mus.
Esper, E.J.	Erlangen, Germany, Bot. Inst. Univ.
Flahault, C.	Montpellier, France, Inst. Bot.
Forti, A.	Pavia, Italy, Bot. Inst.
Foslie, M.	Trondheim, Norway, Kong. Nor. Vid. Selsk. Bot. Saml.
Geitler, L.	Vienna, Austria, Bot. Inst.; Lunz, Austria, Biol. Stat.
Gardner, N.L.	Calif., U.S.A., Berkeley Univ.
Gaudichaud, C.	Paris, France, Mus. Nat. Hist.; Florence, Italy, Inst. della Univ. di Firenza.
Gran, H.H.	Oslo, Norway, Bot. Mus.
Grintescu, I.	Cluj, Romania, Inst. Bot. Gen. Univ.
Groves, H. & J.	London, England, Kew Herb & Brit. Mus. *(Charophyta)*
Grunow, A.	Vienna, Austria, Mus. Nat. Hist.
Hallas, E.	Copenhagen, Denmark, Bot. Mus.
Hansgirg, A.	Vienna, Austra, Mus. Nat. Hist.
Hauck, F.	Leiden, Holland, Rijksherbarium.
Hazen, T.E.	Nashville, Tenn., U.S.A., Univ.
Heydrich, F.	Berlin-Dahlen, Germany (destroyed)
Howe, M.A	New York, U.S.A., Bot. Gard.
Hoyt, W.D.	Lexington, U.S.A., W. & L. Univ.; Washington, U.S.A., Nat. Herb.
Hiutfeldt-Kaas, V.W.H.	Oslo, Norway, Bot. Mus.
Hygen, G.	Oslo, Norway, Bot. Mus.
Jacobsen, J.P.	Copenhagen, Denmar, Bot. Mus. *(Desmids)*
Jorde, I.	Oslo, Norway, Bot. Mus.
Karsten, H.	Leiden, Holland, Rijkesherb. *(Chroolepideae)*
Kjellmann, F.R.	Upsala, Sweden, Univ.
Koster, J.T.	Leiden, Holland, Rijksherbarium.
Kutzing, F.T.	Leiden, Holland, Rijksherb. *(Diatoms)*
Kylin, H.	Lund, Sweden, Univ.; Upsala, Sweden, Bot. Mus.
Labillardiere, J.J.	Paris, France, Mus. Nat. Hist.
Lagerheim, G.	Quito, Ecuador.
Laing, R.M.	Christchurch, New Zealand, Canterbury Mus.
Lamarck, J.B. de	Paris, France, Mus. Nat. Hist.
Lamouroux, J.V.F.	Caen, France, Inst. Bot.
Lemoine, P.	Paris, France, Mus. Nat. Hist.
Levring, T.	Goteborg, Sweden(personal Herb.)
Lucas, A.H.S.	Canberra, Australia, Division of Plant Ind.
Lyngbye, H.C.	Copenhagen, Dermark, Bot. Mus.
Martens, G. von.	Leningrad, U.S.S.R., Bot. Gard.
Melvill, J.C.	Shrewsbury, England, Meole Brace Hall.
Meneghini, G.	Florence, Italy, 1st. Bot. Univ.; Leiden, Holland, Rujksherb (few) ex herb. Kutz.
Mertens, F.C.	Paris, Franch, Mus. Nat. Hist.
Montagne, J.G.C.	Paris, France, Mus. Nat. Hist.; Leiden, Holland, Rijksherb. (few) ex berb. Kutz.
Moore, G.T.	St. Louis, Mo., U.S.A., Bot. Gard.

Murray, G.	London, England, Brit. Mus.
Naegeli, C.	Zurich, Switzerland, Inst. Spezielle Botan., Eidgen. Techn. Hochschule; Munich, Germany, Stadtherb.; Leiden, Holland, Rijksherb. (few) ex herb. Kutz.
Nordstedt, C.F.O.	Lund, Sweden, Univ.
Nott, C.P.	Berkeley, U.S.A., Bot. Dept. Univ.-Calif.
Okamura, K.	Tokyo, Japan, Imp. Fish. Inst.
Ostrup, E.	Copenhagen, Denmark, Bot. Mus. *(Diatoms)*
Papenfuss, G.F.	California, U.S.A., Berkeley Univ.
Peterfi, St.	Cluj, Romania, Inst. Bot. Gen. Univ.
Peterson, H.E.	Copenhagen, Dermark, Bot. Mus.
Postels & Ruprecht	Leningrad, U.S.S.R., Bot. Gard.
Printz, H.	Oslo, Norway, Bot. Mus.; Trondheim, Norway, Vid. Selsk.
Pylaie, B. de la	Paris, France, Mus. Nat. Hist.
Raineri, R.	Turin, Italy, 1st Ort. Bot. (fossil algae)
Reinbold, T.	Munich, Germany, Bot. Mus. & Garten; Leiden, Holland, Rijksherb. *(Sargassum, Clapophora)*
Reinke, J.	Keil, Germany, Bot. Inst.
Reinsch, P.	Kew, England, Herb. Bot. Garden.
Ringdal, K.	Oslo, Norway, Bot. Mus.
Rosenvinge, L. Kolderup	Copenhagen, Denmark, Bot. Mus.
Roth, A W.	Berlin-Dahlem, Germany (destroyed)
Ruprecht, F.J.	Leningrad, U.S.S.R., Bot. Gard.
Sauvageau, C.	Paris, France, Mus. Nat. Hist.
Schmidel, O.E.	Berlin-Dahlem, Germany (destroyed)
Schmidle, G.	Zurich, Switzerland, Inst. f. Spez. Bot. Eidgen. Techn. Hochschule.
Schmidt, J.	Copenhagen, Denmark, Bot. Mus.
Schmitz u. Hauptfleisch	Leiden, Holland, Rijksherb. (few)
Setchell, W.A.	California, U.S.A., Berkeley Univ.
Smith, J.E.	London, England, Linnean Soc.
Skottsberg, C.	Upsala, Sweden, Univ.
Smith, G.M.	California, U.S.A., Stanford Univ.
Smith, H.L.	Indiana, U.S.A., Indianopolis High Sch.
Sonder, W.	Stockholm, Sweden, Naturhist. Riksmuseet; Leiden, Holland, Rujksherb. (few) ex Kutz.
Stackhouse, J.	London, England, Linnean Soc
Suhr, J.N.	Leiden, Holland, Rijksherb. (few) ex Kutz; Lund, Sweden, in herb. Agardh.
Suringar, W.F.R.	Leiden, Holland, Rijiksherbarium.
Svedelius, N.E.	Upsala, Sweden, Univ.
Taylor, W.R.	Michigan, U.S.A., Ann Arbor Univ.
Thuret, G.	Paris, France, Mus. Nat. Hist.
Tiffany, L.H.	Illinoise, U.S.A., private coll.-Evanston.
Tilden, J.E.	Florida, U.S.A., private coll. Hesperides.
Transeau, E.N.	Ohio, U.S.A., Columbus Univ.
Wahlstedt, L.J.	Chicago, U.S.A., Nat. Hist. Mus.
Weber van Bosse, A.	Leiden, Holland, Rijksherb; Copenhagen, Denmark, Bot. Mus.
Wildeman, E. de	Brussels, Belgium, Jard. Bot.; Leiden, Holland, Rijksherb. (few) ex herb. van Bosse

Wille, N.	Oslo, Norway, Univ.
Wittrock, V.B.	Upsala, Sweden, Univ.
Wolle, F.	Chigaco, U.S.A., Nat. Hist. Mus.
Womersley, H.B.S.	Adelaide, S. Australia, Univ.-Bot. Dept.
Yamada, Y.	Sapporo, Japan, Hokkaido Imp. Univ.
Yendo, K.	Sapporo, Japan, Hokkaido Imp. Univ.
Zanardini, G.	Venice, Italy, Museo Civico Correr; Leiden, Holland, Rijkesherb. (few) ex Kutz.
Zaneveld, J.S.	Leiden, Holland, Rijksherb; Bogor, Java, Herb. Kebun Raya Indonesia.

The above list which is open to correction and additions has been compiled from various sources by JOSEPHINE Th. KOSTER, Rijksherbarium, Leiden.

SPECIES OF BRITISH MARINE ALGAE NOT REPRESENTED IN THE BRITISH MUSEUM HERBARIUM.

Chlorophyceae
All Volvocales
Chlorochytrium facciolae (Borzi) Bristol
" immersum Massee
" moorei Gardn.
" willei Prints
Sykidion dyeri Wright
Chlorella marina Butch.
" ovalis Butch.
" salina Butch.
" stigmatophora Butch.
Nannochloris atomus Butch.
" maculatus Butch.
Trebouxia humicola (Treboux) Puvmaly
Stichococcus cylindricus Butch.
Chaetobolus gibbus Rosenv.
Entocladia perforans (Huber) Levr.
Ochlochaete hystrix Thwaites
Pringsheimiella scutata (Rke) Marchew
Pseudulvella applanata Setch. & Gardn.
Gomontia manxiana Chodat
Cladophora pachyderma (Kjellm.) Brand
Rhizoclonium hieroglyphicum (Ag.) Kutz.
Spongomorpha pallida (Kjellm.) Kylin
Enteromorpha ahlneriana Bliding

Phaeophyceae
Streblonema effusum Kylin
" helophorum (Rosenv.) Batt.
" intestinum (Reinsch) Holm. & Batt.
Petroderma maculiformis (Wollny) Kuck.
Sorapion simulans Kuck.

Myriocladia tomentosa Crn.
Laminaria ochroleuca
Choristocarpus tenellus (Kutz.) Zan.
Sphacelaria saxatilis (Kuck.) Sauv.

Rhodophyceae
Asterocytis ramosa (Thwaites) Gobi
Erythrocladia irregularis Rosenv.
" subintegra Rosenv.
Acrochaetium battersianum Hamel
" brebneri (Batt.) Hamel
" emergens (Rosenv.) W.v. Bosse
" endophyticum (batt.) Batt.
" nemalionalis (De Not.) Born.
" pallens (Zan.) Nag.
" parvulum (Kylin) Hoyt
" reticulatum (Batt.) Papenf.
" sanctae-mariae (Darb.) Hamel
" scapae (Lyle) Papenf.
" seirolianum (Harv-Gibs.) Rosenv.
Cruoriopsis gracilis (Kuck.) Batt.
Lithophyllum adplicatum Fosl.
" hapalidioides (Crn.) Heydr.
Lithothamnion compactum Kjellm.
" granii Fosl.
" laeve Stromf.
Bonnemaisonia clavata (Schousb.) Hamel
Antithamnion spirographidis Schiffn.
Ceramium areschougii Kylin
" atlanticum Petersen
" pedicellatum (Duby) J.Ag.
Polysiphonia spiralis Batten
" richardsonii Hook.

Myxophyceae
Anacystis marina (Hansg.) Dr. & Daily
Chroococcus calcicola Anand
Gloethece palea (Kutz.) Raben.
Holopedia sabulicola (Lagerh.) Kirchn.
Merismopedia convoluta Bréb. ex Kutz.
" glauca (Ehr.) Nag.
" revoluta Asken.
Synechoccoccus bacillaris Butch.
Chamaesiphon marinus Wille
Dermocarpa enteromorphae Anand
" olivacea (Reinsch.) Tilden
" sphaerica Setch. ex Setch. & Gardn.
Pleurocapsa crepidinum Coll.
" entophysaloides Setch. & Gardn. ex Gardn.
" kerneri (Hansg.) Dr.

Xenococcus gilkeyae Setch. & Gardn. ex Gardn.
" pyriformis Setch. & Gardn. ex Gardn.
" violacea Anand
Anabaena berkleyana (Thwaites) Batt.
Pseudanabaena brevis Carter
Fremyella aeruginea (Batt.) Parke
Plectonema terebrans Gom.
Microcoleus acutirostris Gom.
Phormidium angustissimum W. & G.S. West
" foveolarum Gom.
" fragile Gom.
" monile Setch. & Gardn.
" submembranaceum
" valderianum Gom.
Schizothrix fritschii Anand
Symploca dubia Gom.

Specimens of any of the above mentioned algae will be welcome in order that a complete collection of British marine algae may be available.

LINDA M. NEWTON

REQUESTS FOR RESEARCH MATERIAL.

1 **Joy Kerslake**, at Biology Department, Northern Polytechnic, Holloway Road, London, N.7., would like material of *Ectocarpus spp.* as follows:

Ectocarpus confervoides, E. siliculosus, E. arctus, E. dasycarpus, E. hiemalis, E. penicillatus, E. amphibius, & E. pygmaeus.

2. **Robert E. Harris** at Department of Botany, the University, Manchester, 13. would like specimens of *Callithamnion spp.* for cytological and morphological investigation. Fixed material in Formalin-alcohol and herbarium sheets required.

3. **Alan P. Austin**, at Department of Botany, University College of Wales, Aberystwyth, would like specimens of *Furcellaria fastigiata* (L.) Lamour. from anywhere in Britian and Europe. Fixed material in Formalin-alcohol and herbarium sheets required.

SECOND INTERNATIONAL SEAWEED SYMPOSIUM.

The Norwegian Institute of Seaweed Research announces that a Symposium will be held at Trondheim, Norway on July 14, 15 & 16th 1955. The Symposium will be followed by an Excursion to Molde on the Western Coast of Norway in order that members may see typical fjord and exposed coastal districts.

Papers will be accepted on the following main subjects:

(1) Chemistry of seaweeds, including methods used in the study of seaweed products. (2) Technical subjects connected with harvesting and industrial exploitation of seaweeds. (3) Experimental studies of the nutritional value of seaweed products. (4) Algological studies on species which are used for (or may be used) in industry.

Papers should preferably be presented in English. No papers will be read by title.

Correspondance relating to the Symposium should be addressed to:

Second International Seaweed Symposium,
c/o Professor T. Braarud,
Blindern,
OSLO,
Norway.